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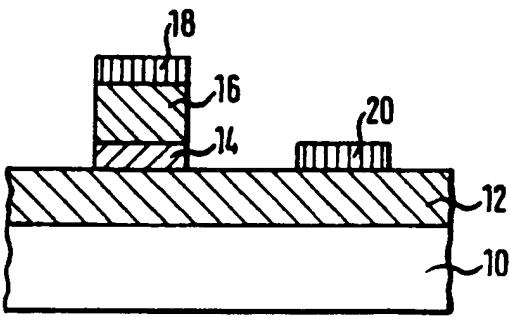
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(54) Resonant tunneling devices

(57) A resonant tunneling device and method of making same wherein the tunneling device includes a quantum well composed of silicon, and a pair of tunneling barriers of a material having a bandgap wider than that of silicon and epitaxially depositable on silicon on opposing surfaces of the quantum well. Aluminium can be substituted for the silicon. The tunneling barriers can be doped with a p-type or n-type dopant. A contact is disposed on each of the barrier layers and remote from the quantum well. In a further embodiment, there are provided second and third layers of silicon, each disposed on one of the tunneling barriers and remote from the quantum well, the contacts being connected to the second and third layers of silicon. In a further embodiment, a third contact is disposed on the quantum well.

### FIG. 5B





European Patent  
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EUROPEAN SEARCH REPORT

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EP 94 10 7763

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X	PATENT ABSTRACTS OF JAPAN vol. 15 no. 326 (E-1102) , 20 August 1991 & JP-A-03 123087 (OKI ELECTRIC IND CO LTD) 24 May 1991, * abstract * ---	1,2,4,5	H01L29/88 H01L29/73 H01L21/329 H01L21/331
A	ELECTRONICS LETTERS, vol. 28, no. 115, 16 July 1992 STEVENAGE GB, pages 1432-1434, T. SUEMASU ET AL. 'Room temperature negative differential resistance of metal (CoSi <sub>2</sub> )/insulator (CaF <sub>2</sub> ) resonant tunneling diode' * the whole document * ---	1-5	
A	SUPERLATTICES AND MICROSTRUCTURES, vol. 13, no. 3, 1993 LONDON GB, pages 365-369, J.W. SLEIGHT ET AL. 'Vertical conduction in thin Si/CaF <sub>2</sub> /Si structures' -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			H01L
<p>The present search report has been drawn up for all claims</p>			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	24 October 1995	Baillet, B	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			